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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/567,546	12/05/2006	Ammar Lecheheb	17307US01	6641
23446 7590 11/26/2008 MCANDREWS HELD & MALLOY, LTD 500 WEST MADISON STREET SUITE 3400 CHICAGO, IL 60661				
EXAMINER				
FIDLER, SHELBY LEE				
ART UNIT		PAPER NUMBER		
2861				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/567,546

Applicant(s)

LECHEHEB, AMMAR

Examiner

SHELBY FIDLER

Art Unit

2861

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 November 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 13-23 is/are pending in the application.
- 4a) Of the above claim(s) 13-16 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 17-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 February 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/S508)
Paper No(s)/Mail Date 4/17/2006
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

Applicant's election with traverse of Group 2, the invention drawn to a print head, in the reply filed on 11/13/2008 is acknowledged. The traversal is on the ground(s) that limitations found in the method claims are analogous to limitations of the apparatus claims. Therefore, Applicant feels that search and examination of all the claims can be made without serious burden. Applicant also contends that Examiner has not established a "prima facie serious burden," since the Restriction Requirement did not specifically articulate an explanation of separate classification, separate status in the art, or a different field of search. These arguments are not found persuasive because, as shown in the Restriction Requirement dated 10/16/2008, Groups 1 and 2 do not share a special technical feature, and thus lack a unity of invention. Search and examination of two inventions that do not share unity of invention would place a serious burden on Examiner.

The requirement is still deemed proper and is therefore made FINAL.

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

The information disclosure statement (IDS) submitted on 4/17/2006 has been considered by the examiner.

Drawings

Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures.

The drawings are also objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: reference number 240 (shown in Figure 2).

The drawings are also objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: temperature sensor 270b (as described in page 5, lines 28-30 of the specification).

Finally, the drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "temperature control means" (claim 17), and the "temperature controller coupled to the first and

second temperature sensors" (claim 22) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: Print Head Comprising Temperature Control Means.

Claim Objections

Claim 22 recites the limitation "the print control head" (line 11 of the claim). There is insufficient antecedent basis for this limitation in the claim.

Claim 22 is also objected to because of the following informalities: please change "regulating" (line 15 of the claim) to "regulate," so as to place the claim in proper sentence format. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 17, 18, and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Nakata et al. (US 6331050 B1).

Regarding claim 17:

Nakata et al. disclose a print head comprising:

one or more print elements (heat generating elements 2);

a storage reservoir (chamber 17) for holding a temperature control medium that is also a print medium (col. 17, lines 60-65), the storage reservoir being in fluid

communication with the one or more print elements such that, during printing, the temperature control medium can circulate from the storage reservoir to the one or more print elements and then back to the reservoir (Fig. 17); and

a temperature control means (pump 111b) for regulating the temperature of the temperature control medium that flows from the reservoir to the print elements so as to regulate the temperature of the print head (col. 17, lines 60-67 & Fig. 17).

Regarding claim 18:

Nakata et al. disclose all the limitations of claim 17, and also that the print head comprises:

a first conduit (path 114) connected to provide fluid communication from the storage reservoir to the printing elements (Fig. 17); and

a second conduit (path 115) for providing fluid communication from the printing elements to the storage reservoir (Fig. 17).

Regarding claim 21:

Nakata et al. disclose all the limitations of claim 17, and also that the temperature control means (111b) regulates the temperature of the temperature control medium in the reservoir (col. 17, lines 60-67).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 19, 22, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakata et al. (US 6331050 B1) in view of Hiroswawa et al. (US 5220345).

Regarding claim 19:

Nakata et al. disclose all the limitations of claim 18, **but do not expressly disclose** that the print head also comprises temperature sensors in the first and second fluid conduits.

However, Hiroswawa et al. teach that it is advantageous to arrange a first temperature sensor (sensor 8A) to sense the temperature in an ink supply conduit, and to arrange a second temperature sensor (sensor 8B) to sense the temperature in an ink return conduit (col. 4, lines 26-36 & Fig. 2), since doing so allows for control of the ink flow to establish uniform temperature distribution in the recording head (col. 5, lines 34-39).

Therefore, at the time of invention, it would have been obvious to a person of ordinary skill in the art to modify Nakata et al.'s print head to include temperature sensors into the ink conduits, such as suggested by Hiroswawa et al.

Regarding claim 22:

Nakata et al. disclose a print head comprising:
one or more print elements (heat generating elements 2);
a storage reservoir (circulation passage 110) for holding a temperature control medium that also is a print medium (col. 16, lines 22-26), the storage reservoir being in

fluid communication with the one or more print elements such that, during printing, the temperature control medium can circulate from the storage reservoir to the one or more print elements and then back to the reservoir (Fig. 18);

a second temperature sensor arranged to measure the temperature of one of the print head and the temperature control medium that is returned from the print elements (col. 18, lines 65-67);

a temperature controller (CPU 302) coupled to the first temperature sensor and to the reservoir (inherent to col. 18, lines 65-67), the temperature controller being adapted to sense the temperatures measured by the first temperature sensor and to regulate the temperature of the temperature control medium in the reservoir in response to the measured temperatures so as to regulate the temperature of the print head (col. 29, lines 29-32 & col. 18, lines 32-43).

Nakata et al. do not expressly disclose a first temperature sensor that is arranged to measure the temperature of the temperature control medium that is communicated from the reservoir to the print elements.

However, Hirosawa et al. teach that it is advantageous to arrange temperature sensors (sensors 8A, 8B) to measure the temperature of ink that is communicated between a reservoir and print elements (col. 4, lines 26-36 & Fig. 2), since doing so allows for control of the ink flow to establish uniform temperature distribution in the recording head (col. 5, lines 34-39).

Therefore, at the time of invention, it would have been obvious to a person of ordinary skill in the art to modify Nakata et al.'s print head to include temperature sensors into the ink conduits, such as suggested by Hirokawa et al.

Regarding claim 23:

Nakata et al. as modified by Hirokawa et al. disclose all the limitations of claim 22, and **Nakata et al. also disclose** that the temperature control medium is an ink (col. 18, lines 32-43 & Fig. 18).

Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nakata et al. (US 6331050 B1) in view of Kao et al. (US 6634731 B2).

Regarding claim 20:

Nakata et al. disclose all the limitations of claim 17, **but do not expressly disclose** that the print head also comprises a temperature sensor arranged to measure the temperature of the print elements.

However, Kao et al. teach that, by utilizing temperature sensors (temperature sensor 410) next to each print element (Fig. 4), one is able to increase the quality of printing via selective control of the print elements (heating device 450) based on the temperature information (col. 9, lines 40-52).

Therefore, at the time of invention, it would have been obvious to a person of ordinary skill in the art to modify Nakata et al.'s print head to include temperature sensors arranged to measure the temperature of the print elements, such as suggested by Kao et al.

Communication with the USPTO

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SHELBY FIDLER whose telephone number is (571)272-8455. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Luu can be reached on (571) 272-7663. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Shelby Fidler/
Examiner, Art Unit 2861

/Stephen D Meier/
Supervisory Patent Examiner, Art Unit 2853